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AUTHOR Corlett, Donna; Schendel, Ruby
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ABSTRACT

The relationship of traditional and nontraditional variables to grades achieved by University of Portland (Oregon) students in five different majors (business, liberal arts, education, nursing, and engineering) was studied. Traditional variables were: the college major; freshman writing class grade; California Aptitude Test (CAT) scores in reading, language arts, and reference; gender; and race. Nontraditional variables were: high school attended, employment, community/church activities, athletics, citizenship, preferred language, parent education, and high school activities. Eighty-nine freshmen completed the CAT, Form D, and the Student Descriptive Surveys. The criterion was the fall 1986 grade point average (GPA). Multiple regression analysis indicated that traditional variables are better than nontraditional variables as predictors of academic achievement among the study group, at least for GPA, a short term measure. Nontraditional variables may prove more effective for academic achievement in long-term prediction of academic achievement and/or persistence. The best predictor of GPA was the grade received in the freshman writing class. Basic skills did not differ significantly among students in five different majors. (Author/SW)

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Basic Skills Across The Disciplines at the University Level: Reading, Language Arts and Reference Skills

Donna Corlett

Ruby Schendel

School of Education

University of Portland

5000 N. Willamette Blvd.

Portland, Oregon 97203

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Running Head: BASIC SKILLS

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Abstract

Statement of the Problem

The problem for this study was as follows: What is the relationship of the traditional variables (college major, Eng. 107 grade, CAT test scores in reading, language arts and reference skills, gender, race) and the non-traditional variables (high school attended, employment, community/church activities, athletics, citizenship, preferred language, parent education and high school activities) to the academic standing achieved by different majors - Business, Liberal Arts, Education and Nursing, and Engineering -- at the University of Portland during the fall semester of 1986?

Method Used

Eighty nine students completed the California Achievement Test, Form D, and the Student Descriptive Surveys which were administered to seven sections of Eng. 107, Expository Writing, which is the freshman level English class. The criterion was the G.P.A. achieved at the end of the fall semester of 1986 when the students were tested. The design was multiple regression analysis. The variables used were

Traditional	Non-Traditional
Major - Business, Liberal Arts, Education and Nursing and Engineering	High School - Public or Private
Eng. 107 Expository Writing Grades	Employment - Full or Part Time
California Achievement Test, CAT, scores - Reading, Spelling, Language and Reference Skills	Community/Church Activities
Gender	Athletics
Race	First Language - English or Other
	Parent Education - Male and Female
	High School Activities

Conclusions:

The findings of the multiple regression analysis reinforced the notion that traditional variables are better than non traditional variables as predictors of academic achievement at the University of Portland. Non-traditional variables may prove more effective for academic achievement and/or persistence over the long term. The single best predictor of college success was found to be the Eng. 107 grade with an R-square of .5287. The CAT total reading score increased the R-square value to .5433 and gender increased the R-square value to .5559.

There was no evidence that a difference in basic skills

existed among students across the disciplines -- Business, Engineering, Education and Nursing, and Liberal Arts.

Basic Skills Across the Disciplines at the University Level: Reading, Language Arts, Reference Skills

Background:

A computer search of the research literature from 1980 to 1985 on the topics of basic skills at the college level, the California Achievement Test (CAT) for basic skills, and the relationship of CAT and the California Basic Education Skills Test (CBEST) revealed a paucity of items. The basic skills assessment movement is in its infancy and there is a need especially at the post secondary level for further research (Kraetsch, 1980). As the emphasis across the continuum of education continues to be on standards of quality and excellence, and as we move further into the information age as described in Megatrends and other documented future trends writings, it has become apparent that the basic skills -- reading, language arts, math, reference/study skills -- are becoming ever more essential for both students and citizens in the developed countries to carry out their lives productively and to contribute to society. Interestingly enough, current research suggests that the more evident it becomes that basic skills are vital, the more obstacles rise to provide the services to those students who need remediation in those skills (Crawford, 1979).

Since the elementary and secondary schools are the backbone

of our educational system, it is only logical that the thrust has been towards assessment of basic skills of teacher candidates. This assessment has now been made a necessary criteria for certification in many states and will probably be required by all states within the next five years. California was one of the leaders in this movement by requiring the passing of the CBEST of all teacher candidates.

The State of Oregon now requires the passing of the CBEST prior to issuing all teacher certificates. The Oregon Universities and Colleges have responded to this requirement by designing a basic skills test and remediation program for those students needing it as part of the requirements for entering the final stages of teacher training. The test most often used is the CAT which has been extensively reviewed (Buros, 1978).

The passing of the CAT at the 60 percentile level for Reading, Language Arts, and at the 50 percentile in Math is the preparation and review for passing the state CBEST requirement and to identify those students who need review and/or instruction. It is not clear from research whether these students had inadequate basic skill teaching/learning or if the deficiency is the result of the lack of use of these skills.

The issue of basic skills concerns all post secondary students, their academic achievement, and the possible college

retention problems. A common assumption is that education majors differ from other majors in academic abilities/achievement. The proposed study intends to address these notions.

Purpose of Study:

The purpose of this basic research study is to establish a data base that may contribute useful information and direction for future studies at the University of Portland, other small colleges and larger institutions in the following areas:

1. Comparison of student achievement in basic skills -- reading, language arts, reference -- across the disciplines.
2. Correlation and interaction between and within traditional variables and non-traditional variables (Tom, 1982) with grade achievement and retention -- a longitudinal aspect to be followed up in Fall 1988.
3. Implications for developing a predictive tool or/and studies for the future.
4. Assessment and curriculum planning of freshman required core courses related to basic skill elements to strengthen student skills.
5. Assessment and future planning of remediation services in terms of student needs.

6. Indications for seminars for faculty development across the disciplines in teaching vocabulary, structure/schemata/arrays for reading content, study and research skills necessary to their content areas.
7. Impact of basic skills as a factor in institutional retention of students -- a longitudinal aspect to be followed up in the Fall of 1988.

Statement of the Problem:

The problem for this study was as follows: What is the relationship of the traditional variables (college major, Eng. 107 grades, CAT test scores in reading, language arts and reference skills, gender, race) and the non-traditional variables (high school attended, employment, community/church activities, athletics, citizenship, preferred language, parent education and high school activities) to the academic standing achieved by different majors -- Business, Liberal Arts, Education and Nursing, and Engineering -- at the University of Portland during the fall semester of 1986?

Hypothesis:

The basic skills achievement of students in reading, language arts and reference skills are not different across the majors -- Business, Liberal Arts, Education and Nursing, and Engineering.

Method:

Eighty nine students completed both the California Achievement Test (CAT), Form D, and the Student Descriptive Surveys which were administered to seven sections of Eng. 107 Expository Writing, which is the freshman level writing class. The Student Descriptive Survey was a redesigned adaption of the one used by Tom and consisted of fifty seven items to obtain the non-traditional variables (Tom, 1982).

The criterion was the G.P.A. achieved at the end of the fall semester of 1986 when the students were tested. The design of the study was a step wise multiple regression analysis. The variables used were:

Traditional	Non-Traditional
Major - Business, Liberal Arts, Education and Nursing and Engineering	High School - Public or Private
Eng. 107 Expository Writing Grades	Employment - Full or Part Time
California Achievement Test, CAT, scores - Reading, Spelling, Language and Reference Skills	Community/Church Activities
Gender	Athletics
Race	First Language - English or Other
	Parent Education - Male and Female
	High School Activities

Procedure:

A Pearson's correlation was computed with all the interval data to identify intercorrelation using the most powerful test available (See Table 1). As anticipated, a strong relationship was found between the cumulative grade point average and all those traditional measures, (i.e., California Achievement Test scores in reading, language, spelling, and reference skills; and the grade received from English 107). The reported correlation coefficients and level of significance for the comparisons follow:

G.P.A. with	English 107 grade	r = .7271
		p = .001
	CAT Total Reading Scores	r = .2292
		p = .015
	CAT Total Language Scores	r = .1572
		p = .071
	CAT Spelling Scores	r = .1395
		p = .096
	CAT Reference Scores	r = .0214
		p = .421

Factor analysis was attempted to identify factors which would be more powerful and reduce the number of variables for use in a multiple regression equation. A correlation matrix including all the variables in the study failed to show the necessary high

Table 2

Multiple Regression

Equation Number 1	Dependent Variable GPA		
Variable(s) Entered on Step Number 3	GENDER		
Multiple R	.74561		
R^2	.55594	R^2 Change	.01260
Adjusted R^2	.54027	F Change	2.41270
Standard Error	.41048	Significance of F Change	.1241

Variable	B
Grade 107	.551132
Total Reading	.001157
Gender	.135346
(Constant)	.285944

G.P.A. = .2859 +
.5511(English 107 Grade) +
.0012(CAT Total Reading Score) +
.1353(Gender)* +
error

*[pos. value-female, neg. value-male]

Summary

Step	Multiple R	R^2	F (Equation)	Significance of F	R^2 Change	F Change	Significance of F
1	.7271	.5287	97.598	.000	.5287	97.598	.000
2	.7371	.5433	51.161	.000	.0146	2.755	.101
3	.7456	.5559	35.472	.000	.0126	2.413	.124

Output from SPSSX using VAX 11/780 VMS V4.2

intercorrelation between variables (except for those traditional variables clustered around an "academic aptitude" factor). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Anti-Image Correlation (AIC) test were used to further test the appropriateness of the factor analysis. The KMO was found to be at the lower limits of adequacy, but the AIC showed large coefficients which indicated factor analysis was inappropriate. The factor analysis model was abandoned at this point and it was concluded that all variables would be entered into a stepwise multiple regression procedure.

Findings:

The first variable identified by regression was the variable, race, but a frequency table of this variable showed such small cells in all but the "Caucasian" and "Oriental" levels, the variable was dropped from further consideration for this current analysis.

The variable with the most important influence on G.P.A. identified by the stepwise procedure was the English 107 grade which accounted for 0.52870 of the variance with a statistical significance of $p = 0.000$ (See Table 2). Two other variables, CAT Total Reading Scores and Gender, entered into the equation only when the critical point was lowered to $p = 0.12$, accounting for an additional 0.02724 of the total variance.

Table 1

Pearson Correlation Coefficients

	Total Reading	Total Language	Spelling	Reference	107 Grade	G.P.A.
Total Reading Scores	1.0000 (0) p=.					
Total Language Scores	.5676 (89) p=.000	1.0000 (0) p=.				
Spelling Scores	.5201 (89) p=.000	.7982 (89) p=.000	1.0000 (0) p=.			
Reference Scores	.2657 (89) p=.006	.4479 (89) p=.000	.3574 (89) p=.000	1.0000 (0) p=.		
English 107 Grade	.1508 (89) p=.079	.0949 (89) p=.188	.1131 (89) p=.146	.0343 (89) p=.375	1.0000 (0) p=.	
G.P.A.	.2292 (89) p=.015	.1572 (89) p=.071	.1395 (89) p=.096	.0214 (89) p=.421	.7271 (89) p=.000	1.0000 (0) p=.

No statistically significant effect on G.P.A. was found related to the variable, major; and no effect was found related to CAT Language, CAT Spelling, and CAT Reference Skills scores.

Conclusions:

The findings of the multiple regression analysis reinforced the notion that traditional variables are better than non traditional variables as predictors of academic achievement among students at the University of Portland, at least for the short term measures of grade point average. Non traditional variables may prove more effective for academic achievement in long term prediction of academic achievement and/or persistence. The single best predictor of success in college, as measured by G.P.A., was found to be the grade received in English 107, accounting for .52870 of the variance. One other variable, the CAT Total Reading score, increased the R-square value to .54333, and another variable, gender, increased the R-square value to .55594 when the level of significance was increased to $r = 0.12$. No statistically significant predictive ability ($p = .05$) was gained by using more variables than the English 107 grade. More information needs to be gathered concerning the predictive validity of the English 107 grade, and additional subjects are needed to increase the representation of levels in the variable, race.

The statistical tests did not produce any evidence to support

the hypothesis that a difference in basic skills exists among students in Liberal Arts and the professional schools of Engineering, Business, and Education and Nursing. The survey further reveals that at both the levels of administration and curriculum development, we must address the need to provide remediation opportunities across disciplines for basic skill acquisition or review.

The investigation of basic skills across disciplines resulted in broad distributions of CAT scores within majors, but with no significant difference among majors. Table 3 shows a distribution of percentages of scores earned by majors in Business, Engineering, Education and Nursing, and Liberal Arts.

Table 3

Percentages by Majors of CAT Scores

CAT Raw Score Intervals	Business	Engineering	Education & Nursing	Liberal Arts
850-899	0	0	0	0.6
800-849	2.8	7.7	6.3	4.9
750-799	15.7	15.4	28.1	22.0
700-749	18.5	13.8	40.6	25.0
650-699	28.6	44.3	15.6	27.0
600-649	22.2	15.4	6.3	16.5
550-599	6.5	1.9	0	3.0
500-549	3.7	1.9	0	1.2
Below 500	1.9	0	3.1	0

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